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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/547,447	08/26/2005	Andreas Renz	12810-00119-US	7056

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EXAMINER	
SAIDHA, TEKCHAND	
ART UNIT	PAPER NUMBER
1652	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/547,447	RENZ ET AL.	
	Examiner	Art Unit	
	Tekchand Saidha	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23,25 and 30-33* is/are pending in the application.

4a) Of the above claim(s) *4,9-23,25,32 and 33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-8,30 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Amendment and response filed 2/29/2008 is acknowledged. Claims 1-23, 25 & 30-33 are present in this application. Claims 1-3, 5-8 & 30-31, drawn to the elected invention are under consideration in this Office Action.

2. Applicant's arguments filed with the amendment cited above have been fully considered but they are not deemed to be persuasive. The reasons are discussed following the rejection(s).

3. Any objection or rejection of record not expressly repeated in this Office Action has been overcome by Applicant's response and withdrawn.

4. Claims 4, 9-23, 25 & 32-33 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

5. ***Abstract***

*This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

*The abstract should be in narrative form and generally limited to a single paragraph within the range of 50 to 150 words [in length since the space provided for the abstract on the computer tape by the printer is limited]. The form and legal phraseology often used in patent claims, such as "means" and "said", should be avoided in the abstract. The abstract should sufficiently describe the disclosure to assist readers in deciding whether there is a need for consulting the full patent text for details. MPEP 608.01(b).

The new abstract still uses legal phraseology, such as 'said', for example. Correction is required.

6. Claim Rejections - 35 USC § 112 (first paragraph)

Claims 5-8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 5-8 are directed to a gene construct comprising isolated nucleic acid sequence of claim 1, encoding a polypeptide having acyl-CoA:lysophospholipid-acyltransferase activity,

wherein the nucleic acid is functionally linked to one or regulatory signals, wherein the regulatory sequences remain undescribed. Claims 5-8 are directed to an gene construct comprising the nucleic acid sequence of claim 1 or is derived from eukaryote (claim 3). Claims 5-8 are rejected under this section of 35 USC 112 because the claim is directed to genomic DNA sequences not disclosed in the specification. No description has been provided of the genomic DNA sequences encompassed by the claim. Applicants have not adequately described the nature of the genomic DNA corresponding to the construct comprising the gene. No structural information, beyond the partial characterization by SEQ ID NO:[1 and 2] has been provided by Applicants which would indicate that they had possession of the claimed genomic DNA, i.e. the gene corresponding to the disclosed cDNA sequences. Eukaryotic genes (genomic DNA sequences) are well known in the art of molecular biology to contain elements of structure not present in cDNA sequences. For example, introns are regions of DNA that interrupt coding sequences in eukaryotic genes. In different genes, introns have been detected that are as large as 2000 base pairs. Because cDNA libraries are generated by reverse transcription of mRNA which has been processed in the nucleus to remove introns, intron sequences are not present in cDNA libraries. Since the claimed genomic DNA has not been deposited and no other description of the claimed gene beyond that of the corresponding cDNA exists and no function has been determined aside from the assertion that the cDNA encodes a secreted protein, a person having ordinary skill in the art would not recognize that Applicants had possession of the claimed invention at the time of filing.

In Vas-Cath Inc. v. Mahurkar (CA FC) 19 USPQ2d 1111 the court held that:

Written description of invention required by first paragraph of 35 USC 112 is separate and distinct from that paragraph's requirement of enabling disclosure, since description must do more than merely provide explanation of how to "make and use" invention; applicant must also convey, with reasonable clarity to those skilled in the art, that applicant, as of filing date sought, was in possession of invention, with invention being, for purposes of "written description" inquiry, whatever is presently claimed.

Thus, while the argument may be made that claims 5-8 are enabled for an isolated gene corresponding to the cDNA sequences of SEQ ID NO:[1 and 2], Applicants have not shown that they were in possession of the claimed gene at the time of filing. In Fiers v. Sugano, 984 F.2d

1164, 25 USPQ2d 1601, at USPQ2d 1606 the court stated: An adequate description of a DNA requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it; what is required is description of the DNA itself.

Applicants have not adequately described the claimed gene because no information has been provided pertaining to sequences not present in the cDNA corresponding to the gene, these sequences may include introns as well as regulatory elements such as activators. To paraphrase the Court, if Applicants are unable to envision the detailed chemical structure of the claimed DNA then conception is not achieved until reduction to practice has occurred, that is, until after the gene has been isolated; thus, regardless of the complexity or simplicity of the method of isolation employed, conception of a DNA sequence, like conception of any chemical substance, requires definition of that substance other than by its functional utility.

Amending the claim to read "An isolated polynucleotide comprising..." or the like, would overcome this rejection.

Applicants' Arguments:

Applicants argue that as stated in Eli Lilly and Co., "[a] description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs." 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). As the Examiner acknowledged, the specification discloses additional DNA sequences that encode LPLAT, namely SEQ ID NOs: 3, 5, 7, and 34 (nucleotide 2805- 3653, see page 59, lines 15-16). These sequences share more than 80% identity with SEQ ID NO: 1. Similarly, the polypeptide sequences encoded by these nucleotide sequences share more than 80% identity with SEQ ID NO: 2. These five sequences are clearly representative of the genus being claimed.

Applicants arguments are considered are found to be persuasive with respect to claims 1, 3 & 31-33. Therefore, these claims have not been included in this rejection.

However, claims 5-8, remain undescribed for the language 'gene construct'. According to MPEP 2163, to satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. See, e.g., *Moba, B.V. v.Diamond*

Automation, Inc., 325 F.3d 1306, 1319, 66 USPQ2d 1429, 1438 (Fed.Cir. 2003); *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d at 1563, 19 USPQ2d at 1116.

The invention of claims 5-8 is directed toward a gene construct comprising isolated nucleic acid sequence of claim 1. Gene elements which are not particularly described by the specification including the untranslated regions, and regulatory elements, such as promoter, repressor, inducer, and enhancer elements, are essential to the function of the invention since the claims recite "gene construct". The structure of these untranslated regions and regulatory elements which applicants considers as being essential to the function of the claim are unpredictable and not conventional in the art; and therefore, these untranslated regions and regulatory elements must be empirically determined.

According to MPEP 2163 II. METHODOLOGY FOR DETERMINING ADEQUACY OF WRITTEN DESCRIPTION:

> "…disclosure of a partial structure without additional characterization of the product may not be sufficient to evidence possession of the claimed invention. See, e.g., *Amgen*, 927 F.2d at 1206, 18 USPQ2d at 1021 ("A gene is a chemical compound, albeit a complex one, and it is well established in our law that conception of a chemical compound requires that the inventor be able to define it so as to distinguish it from other materials, and to describe how to obtain it. Conception does not occur unless one has a mental picture of the structure of the chemical, or is able to define it by its method of preparation, its physical or chemical properties, or whatever characteristics sufficiently distinguish it. It is not sufficient to define it solely by its principal biological property, e.g., encoding human erythropoietin, because an alleged conception having no more specificity than that is simply a wish to know the identity of any material with that biological property. We hold that when an inventor is unable to envision the detailed constitution of a gene so as to distinguish it from other materials, as well as a method for obtaining it, conception has not been achieved until reduction to practice has occurred, i.e., until after the gene has been isolated.")"

Therefore, in view of the above considerations one of skill in the art would not recognize that applicants were in possession of the "gene construct comprising the nucleic acid …of claim 1" recited in the claims.

7. Rejections of claims under 35 U.S.C. 112, first paragraph, is withdrawn in view of Applicants' arguments and the arguments presented regarding the recent Board's decision in

Exparte Kubin, 83 USPQ2d 1410 (B.P.A.I. 2007)(hereinafter "Kubin"), wherein the fact pattern are similar.

8. ***Claim Rejections - 35 USC § 112*** (second paragraph)

Claims 1-3, 5-8 & 30-31 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 6, recites 'converts C_{16}, C_{18}-, C_{20}- or C_{22}-fatty acids'. It is unclear what the 'C_{16}, C_{18}-, C_{20}- or C_{22}-fatty acids' compounds are converted to ?? Clarification is requested.

Claims 2-3, 5-8 & 30-31 are included in the rejection for failing to correct the defect present in the base claim(s).

Applicants' arguments are considered but not found to be persuasive in view of Applicants' explanation that these are substrates used in the transferase reaction. Therefore, it is suggested that claims be amended to include this language.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 1-3, 5-8 & 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suggs et al. [Suggs et al. PNAS, USA., 78(11) : 6613-6617 (1981)] in view of Accession Number Q22267 (15 December 1998).

Suggs et al. teach the use of mixtures of chemically synthesized oligodeoxyribonucleotides as hybridization probes for the isolation of specific cloned DNA

sequences. The approach is to "chemically synthesize a mixture of oligonucleotides that represent all possible codon combinations for a small portion of the amino acid sequence of a given protein." Once a protein, in this case the lysophosphatidic acid acyltransferase of AC Q22267 (sequence alignment of AC Q222267 and SEQ ID NO: 2 is 100% identical, provide to Applicants along with the previous Office Action) or the specific sequence is known. Under the principle that one sequence must be complementary to the DNA for that protein, "the complementary oligonucleotide will form a perfectly base paired duplex with the DNA from the coding region...". Thus, mixed oligonucleotide probes allow the isolation of DNA sequences for any protein with a known or obtainable portion of the amino acid sequence.

In light of the method of Suggs et al. for isolating the appropriate DNA sequence coding for a particular protein, it would have been obvious to one of ordinary skill in the art to use these methods to determine the coding nucleotide sequence of lysophosphatidic acid acyltransferase disclose the fact that *C. elegans* produces the lysophosphatidic acid acyltransferase (same source as Applicants' SEQ ID NO: 2) and therefore possesses that DNA, nucleic acid or polynucleotide sequence. The state of the art at the time the invention was made dictates that, since the culturing and recovery of the naturally-occurring enzyme from its natural source yields small, and at times unstable, amounts, production of such proteins by recombinant means is the single best technique to dramatically increase yield and insure stable production of the protein. One would not have to probe a library of possible sources to find a similar gene, as *C. elegenas sequence* provides sufficient motivation to merely determine the sequence from the known source. Thus, the nucleic acid molecule of claims 1-3, 5-8 & 30-31 are not considered patentable.

From this, one utilizing the ordinary level of skill in the art could easily assemble various expression vectors containing either a recovered full length clone, or the appropriate fragments ligated at the corresponding restriction sites. The transformation of host cells with this vector is also within the ordinary skill in the art, as a variety of cell lines, both prokaryotic and eukaryotic, human (mammalian) included, are well documented and commonly used. The selection of the appropriate plasmids, promoters, and cell lines for proper expression of the inserted gene is merely a matter of judicious selection, within the scope of ability of one ordinarily skilled in the art.

This rejection is based on the decision of Exparte MAREK Z. KUBIN and RAYMOND G. GOODWIN (Ex Parte Kubin & Goodwin, No. 2007-0819, 2007 WL 2070495 (Bd.Pat.App. & Interf. May 31, 2007), where the board relied heavily on KSR (KSR Int 'l Co. v. Teleflex Inc., 550 U.S.-, 82 USPQ2d 1385, 1394, 1396 (2007).

In Ex parte MAREK Z. KUBIN and RAYMOND G. GOODWIN, the board found that the claimed nucleic acid encoding the NAIL polypeptide to be obvious over a reference that discloses the NAIL polypeptide and a reference teaching methodologies for isolating the corresponding encoding cDNA. Relying on KSR, the board found that:

"Appellants heavily rely on Deuel. (See, e.g., Br. 19.) To the extent Deuel is considered relevant to this case, we note the Supreme Court recently east doubt on the viability of Deuel to the extent the Federal Circuit rejected an "obvious to try" test. See KSRInt'l Co. v. Teleflex Inc., 127 S.Ct. 1727, ~, 82 USPQ2d 1385, 1394, 1396 (2007) (citing Deuel, 51 F.3d at 1559). Under KSR, it's now apparent "obvious to try" may be an appropriate test in more situations than we previously contemplated. When there is motivation to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.

KSR Int'l Co. v. TeleflexInc., 127 S. Ct. 1727,, 82 USPQ2d 1385, 1397 (2007). This reasoning is applicable here. The "problem" facing those in the art was to isolate NAIL cDNA, and there were a limited number of methodologies available to do so. The skilled artisan would have had reason to try these methodologies with the reasonable expectation that at least one would be successful. Thus, isolating NAIL cDNA was "the product not of innovation but of ordinary skill and common sense," leading us to conclude NAIL cDNA is not patentable as it would have been obvious to isolate it." (see pages 8-9).

Accordingly, isolating the claimed isolated nucleic acid comprising the nucleotide sequence of SEQ ID NO: 1 which encodes the polypeptide comprising the amino acid sequence of SEQ ID NO: 2 is concluded to be the product not of innovation but of ordinary skill and common sense, and therefore, the claimed isolated nucleic acid comprising the nucleotide sequence of SEQ ID NO: 1 is not patentable as it would have been obvious to isolate.

10. No claim is allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tekchand Saidha whose telephone number is (571) 272 0940. The examiner can normally be reached on 8.30 am - 5.00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nashaat Nashed can be reached on (571) 272 0934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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